

Blue Cool Drive AC Extension Kit Ducato

Code: 9029904A

**installation
instructions**

WEBASTO THERMO & COMFORT ITALY S.r.l.

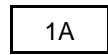
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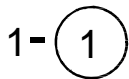
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DESCRIPTION OF SYMBOLS USED



Riferimento a figura / Référence à la figure / See figure
 In Bezug auf Abbildungen / Referencia a la figura



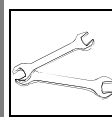
Riferimento a componenti di fornitura / Référence aux composants de la fourniture
 See supplied components / Bezug auf Gelieferte Einbauelemente
 Referencia a los componentes de abastecimiento



Riferimento a posizione schema elettrico / Référence à la position du schéma électrique
 See position in wiring diagram / In Bezug auf Position im Schaltschema
 Referencia a la posición del esquema eléctrico



- Lubrificare tutti i raccordi e gli O.R. con il nuovo olio refrigerante prima di collegarli
 - Graisser tous les raccords et les O.R. avec le nouveau huile réfrigérant avant de les raccorder
 -Lubricate all fittings and O-rings with new refrigerant oil before connecting them
 - Alle Verbindungsstücke und OR-Ringe vor deren Verbindung mit dem neuen Kühlmittelöl ölen
 - Lubrificar todos los empalmes y los O.R. con el nuevo aceite refrigerante antes de conectarlos



- Per avvitare a fondo o allentare i raccordi tubi gas usare due chiavi per bilanciare coppia di torsione
 - Pour visser à fond ou desserrer les raccords des tuyaux gaz, utiliser le deux clés pour équilibrer le couple de torsion
 - When tightening or loosening the fittings of the gas pipes, use two wrenches to equilibrate the torsion couple
 - Um die Verbindungsstücke der Kältemittelschläuche gleichmäßig festzuschrauben oder zu lockern, zwei Schlüssel für das Verschraubungspaar verwenden
 - Para enroscar a fondo o aflojar los empalmes tubos gas se deben usar dos llaves para balancear el par de torsión



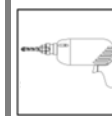
- Tagliare con utensile appropriato al materiale
 - Couper à l'aide d'outil approprié
 - Cut with a device suitable for the material



- Mit dem Material entsprechendem Werkzeug schneiden
 - Cortar con herramienta apropiada al material



- Stagnare
 - Étamer
 - Tin
 - Verzinnen
 - Estañar



- Forare
 - Percer
 - To drill
 - Durchbohren
 - Taladrar



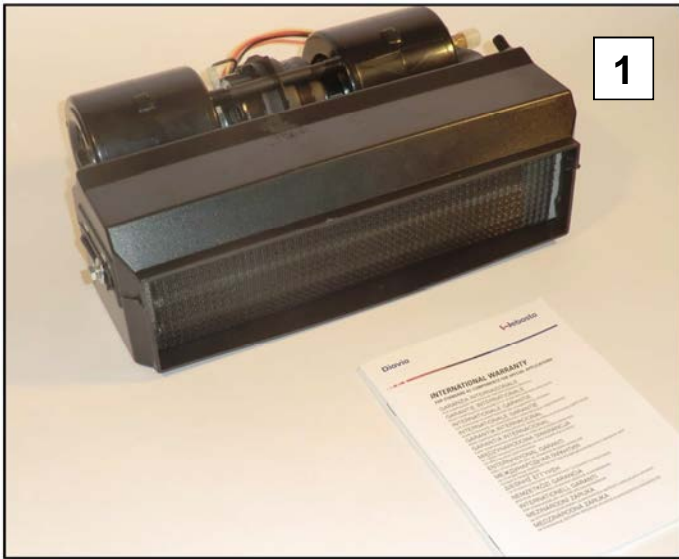
- Spianare
 - Nivelar
 - Flatten out
 - Richten
 - Nivelar

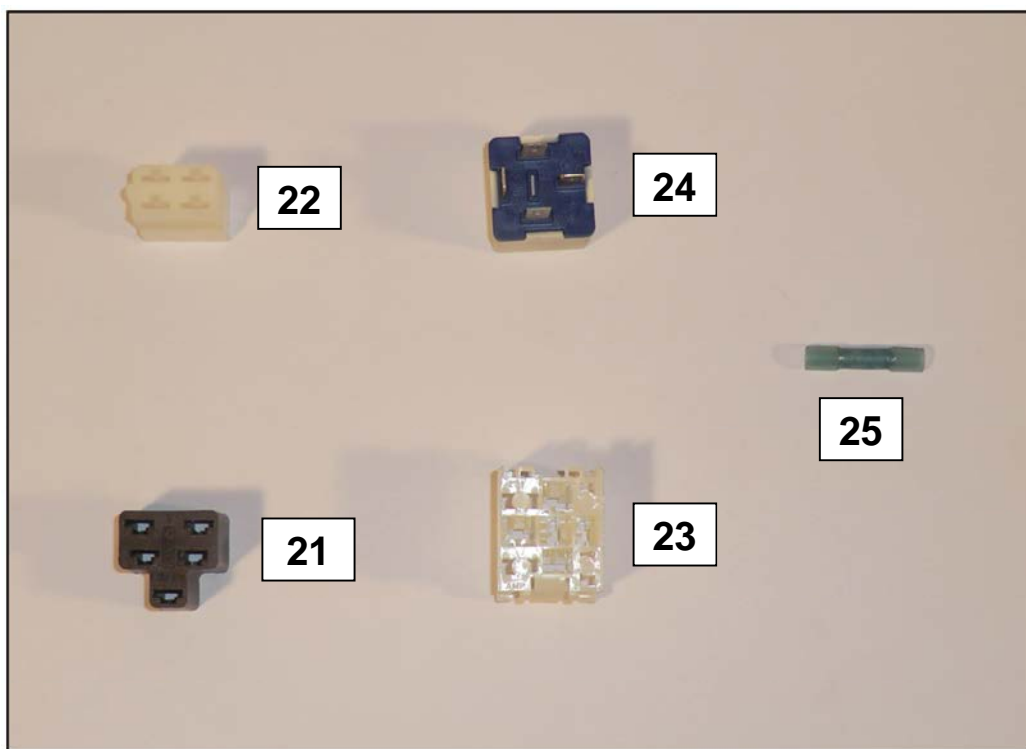
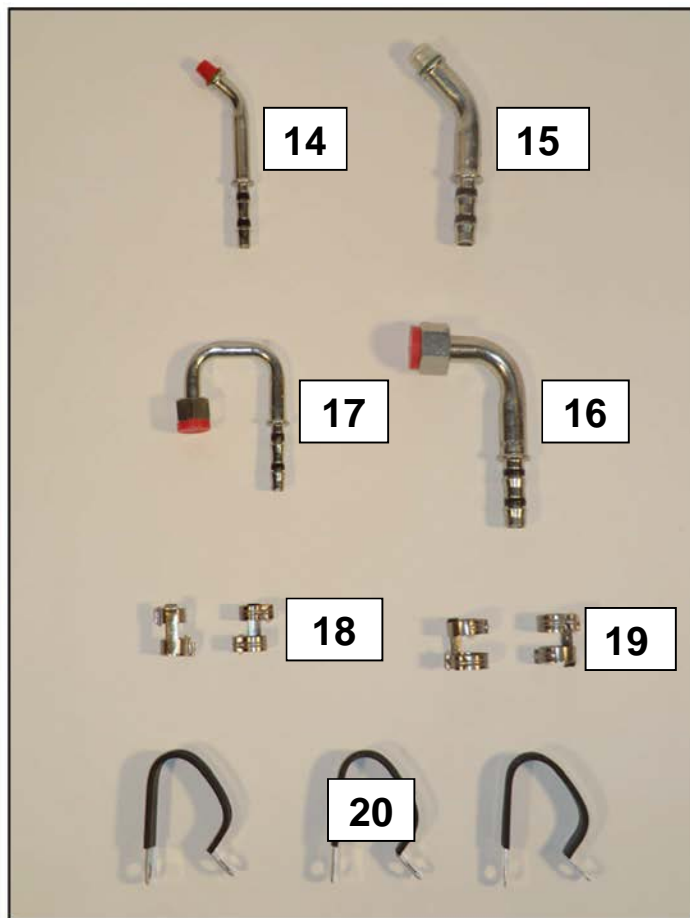
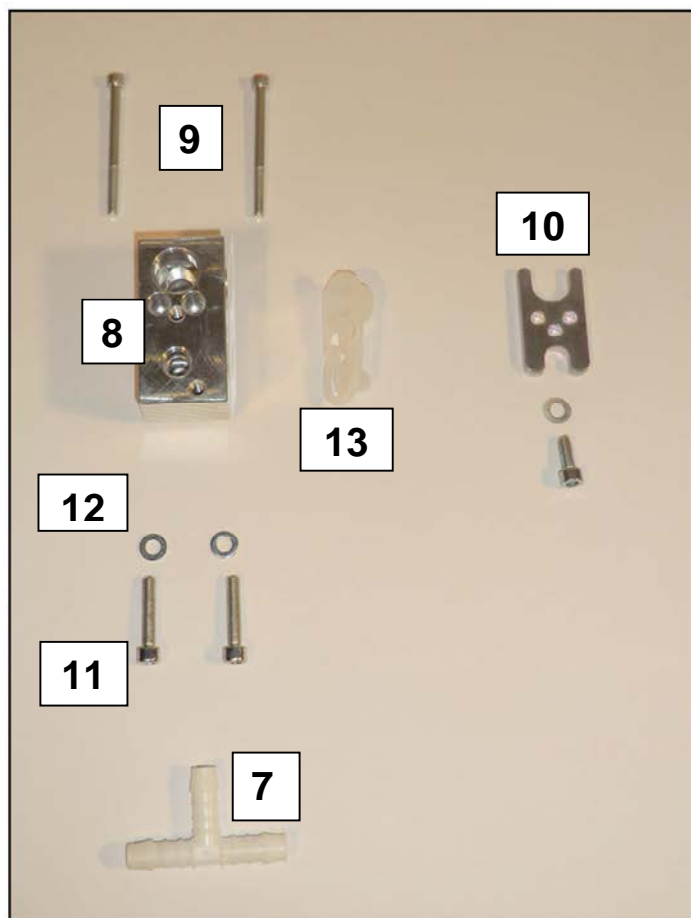


- Tagliare con utensile a lama calda
 - Couper à l'aide d'un outil à lame chaude
 - Cut using the tool with heated blade.
 - Mit Schweißmesserwerkzeug schneiden
 - Cortar con útil a hoja caliente

CONTENT OF THE KIT

Pos.	DESCRIPTION	Pos.	DESCRIPTION
1	Oakland evaporator	16	Junction 1/2 132100-1010-G00 AFM
2	Refrimaster Hose, Length 7 Mt, Size 5/16	17	Junction 5/16 AFM
3	Refrimaster Hose, Length 7 Mt, Size 1/2	18	Hose 5/16 Refrimaster Clamp (862-06-NK)
4	Insulating Polar Hose, Length 4 Mt.	19	Hose 1/2 Refrimaster Clamp (862-10-NK)
5	Condensate drainage hose	20	Clamp 50 mm. Dia.
6	Speed Regulator Kit	21	5 Ways connector Indak 754C3
7	Condensate drainage line T piece	22	4 Ways connector (Oakland Evaporator)
8	Manifold	23	Relay connector 280289-0
9	Screw M5x65 Uni 5931-8.8	24	Relay 30 A
10	Flange	25	Raychem connection (15-25)
11	Screw M6x30 Uni 5931 – 8.8		
12	WASHER D6,4X12 UNI6592		
13	Manifold Cap		
14	Connection 5/16 45° C47640-06-06		
15	Connection 1/2 45° C47640-10-12		





GENERAL DESCRIPTION & DIAGRAM BLOCK

The A/C Extension kit was developed to create an extension of the existing A/C system, and then have the benefit in other parts of the vehicle.

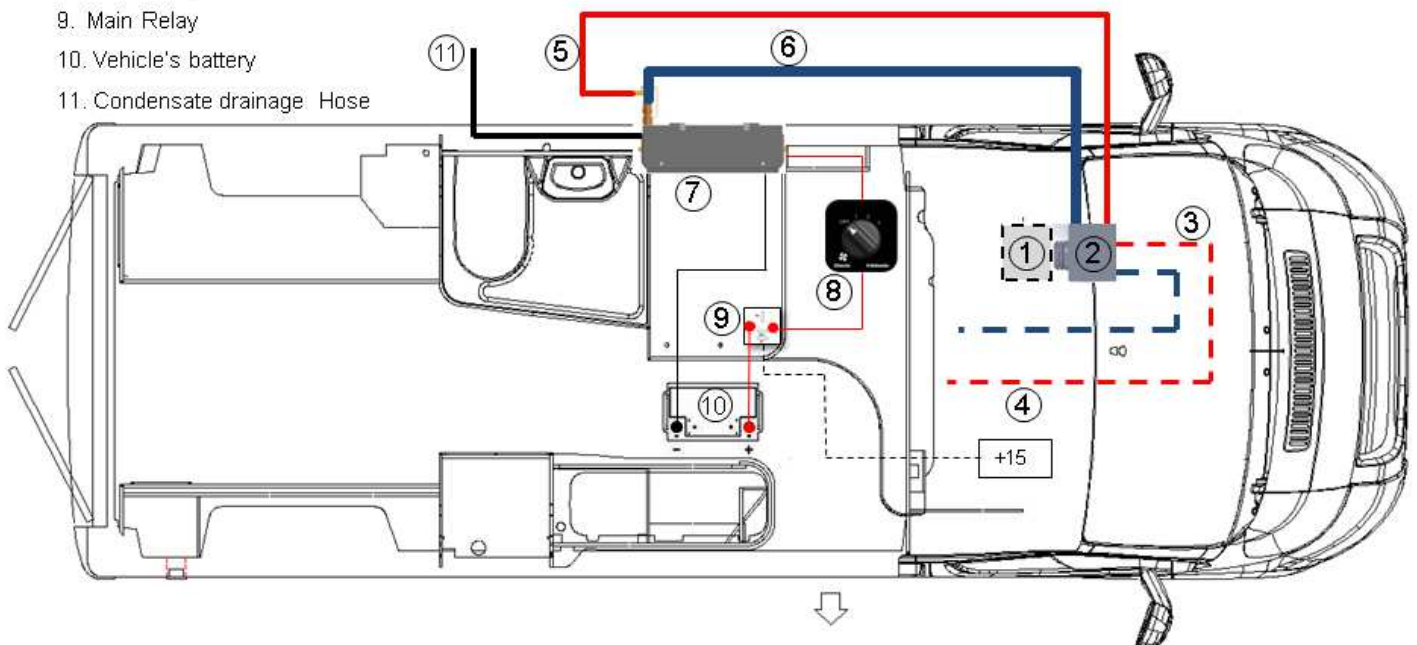
The new evaporator included in the kit can be installed inside the vehicle in your favorite position, you have 7 meters of refrigerant pipes to install it.

The kit includes a control panel, useful to select your favorite evaporator fan speed when the engine is on.

Because the extension is linked to the main A/C compressor, the system will run with the engine on only.

Legend:

- 1. Fiat Expansion HVAC Expansion valve
- 2. Manifold
- 3. Fiat Original HVAC Hose
- 4. Fiat Original HVAC Hose
- 5. Oakland Evaporator High pressure Hose
- 6. Oakland Evaporator Low pressure Hose
- 7. Oakland Evaporator
- 8. Oakland Speed selector
- 9. Main Relay
- 10. Vehicle's battery
- 11. Condensate drainage Hose

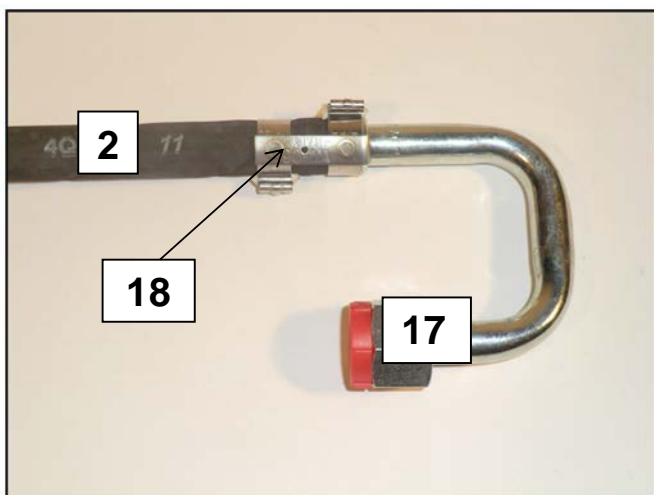


OPERATIONS INSIDE THE VEHICLE

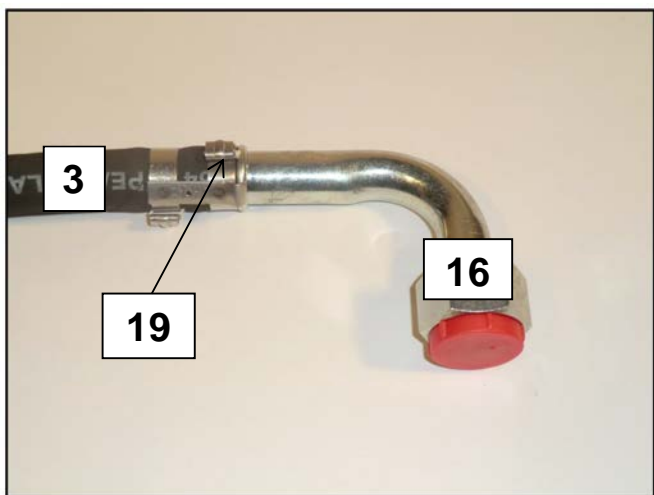
- A. Check the available space where to install the Oakland evaporator. Bear in mind that you have 7 meters of pipes.
- B. Define the installation place according to your needs and vehicle's characteristics: Please bear in mind that you shall be able to exit from the installation place with:
1. Condensate hose.
 2. High pressure hose.
 3. Low Pressure hose.
 4. Cable Harness.
- C. Nevertheless the installation position shall favor an even airflow inside the vehicle and especially over the passenger seats. Bear in mind that cold air is heavier than warm. A high installation position will grant you the best performance.
- D. Once defined the best position for the new evaporator, you can start to :
- Install the Evaporator into the vehicle. Respect the installation positions of it during the assembly.
 - Connect the condensate hose to the evaporator and route it outside the vehicle. Be sure that the condensate can easily flow out (Avoid siphons on this line) .
 - Prepare the $\frac{1}{2}$ and $\frac{5}{16}$ (inches) connection pipes to be used respectively for the "Low Pressure" and "High Pressure Line" by mean of their fittings and dedicated clamps.
 - Connect them to the evaporator and tight at the correct suggested torque.
 - Securely fix the evaporator to the installation surface.
 - Provide proper ventilation to allow operations. Consider maximum capacity of ___ mc / Hour
 - Whistling noise indicates that either air inlet/outlet or both are not properly dimensioned.
- E. Make sure you cover the cold line with the supplied insulating hose to avoid condensate dripping inside the vehicle.
- AVOID SIPHONS AND ENSURE THAT THE LINE GOES OUT WITH A CONTINUOUS FAVORABLE INCLINATION TO EASE THE BACK FLOW OF THE REFRIGERANT TO THE COMPRESSOR WHEN NOT IN USE.**
- F. Route then the refrigerant pipes all the way out of the vehicle and properly fix them under the chassis. Please make sure they are protected by excess of heat, rubbing, foreign objects that could be projected by tyres during vehicle's motion.
- G. Reach the proximity of the original FIAT expansion valve positioned inside the engine compartment near the Cabin's air intake (as shown in the next pictures).
- H. Prepare the electrical connections around the Oakland evaporator (look at the electric scheme enclosed) and connect directly to the battery with a protective fuse as in our scope of supply (10 A). Please bear in mind that relay shall close only when the ignition key is : ON.



Choose the right place where to install the Oakland Evaporator.



Prepare the refrigerant 5/16 hose to connect the evaporator.



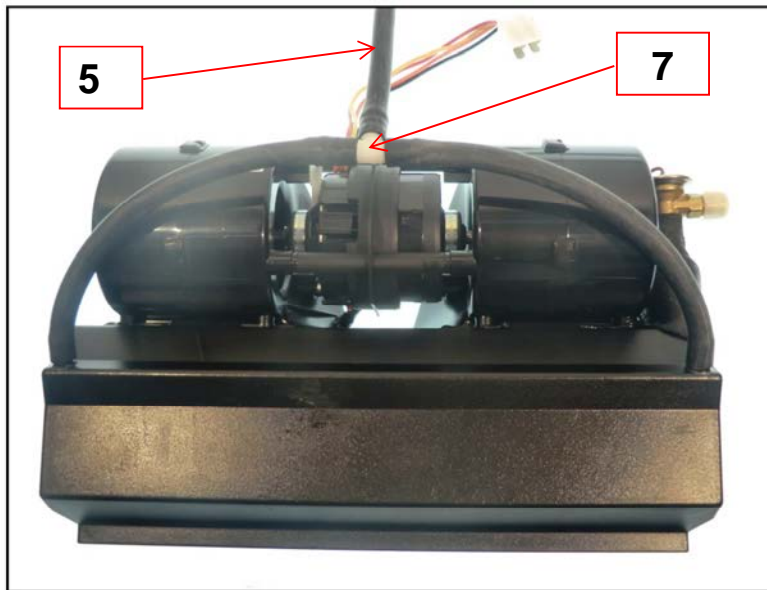
Prepare the refrigerant 1/2 hose to connect the evaporator.



Connect the refrigerant pipes to the Evaporator.

Tight the 5/16 gas connection from 15.4 to 17 Nm Torque.

Tight the 1/2 gas connection from 24.4 to 27 Nm Torque.

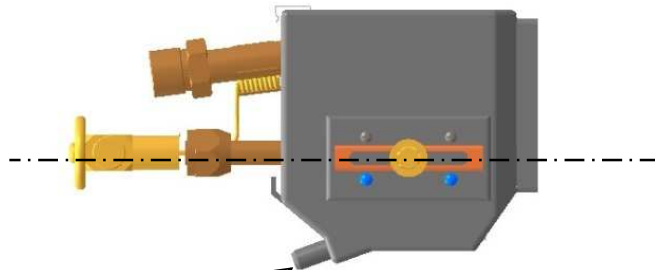


Install the condensate drainage hose



Insulate the 1/2 refrigerant hose using the polar protection hose included into the kit.

Route the condensate hose outside the vehicle. Be sure that the condensate can easily flow out (Avoid siphons on this line) .



Condensate drainage outlet.

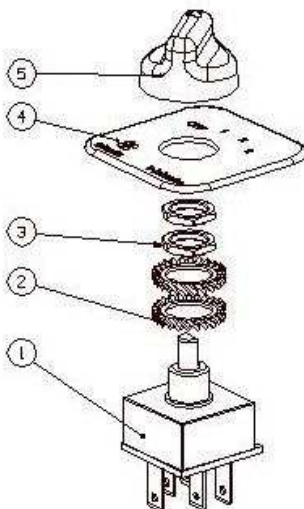
Install the Oakland evaporator horizontally. Make sure that condensate can easily drop off from the unit.



Connect electrically the Oakland evaporator.



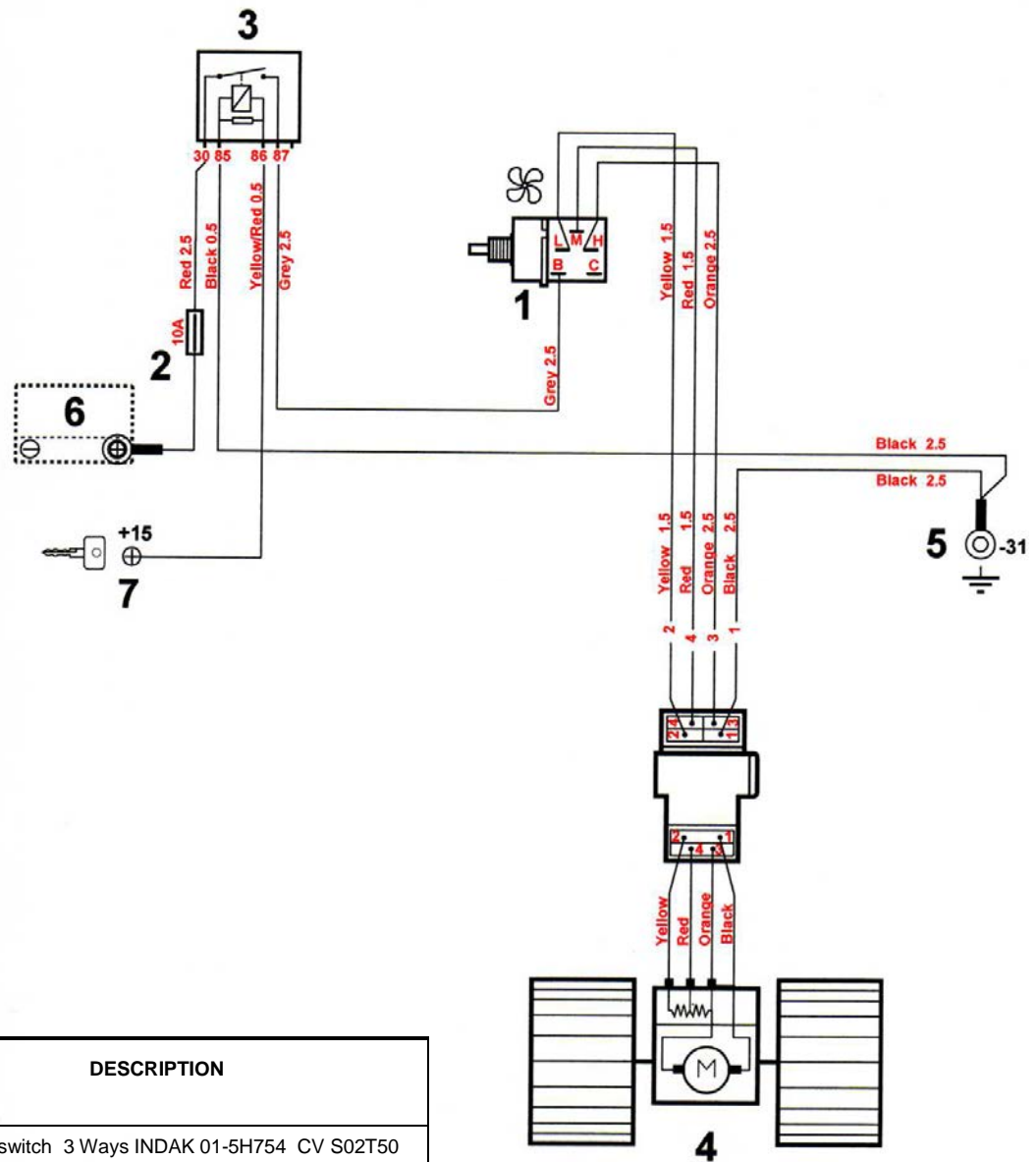
Use the Raychem Junction (part. 25) provided to get the +15 from the vehicle (See page 18).



Ventilator Switch components.

N.	DESCRIPTION
1	Ventilation switch 3 Ways INDAK 01-5H754 CV S02T50
2	Washer D12 DIN6798A-R150
3	Nut
4	Plate
5	Knob

ELECTRICAL SCHEME



N.	DESCRIPTION
1	Ventilation switch 3 Ways INDAK 01-5H754 CV S02T50
2	10 A Fuse
3	Switch Relay
4	Passenger compartment air blower
5	Negative to chassis
6	Battery
7	Positive connection (+15)

20



Route then the refrigerant pipes all the way out of the vehicle and properly fix them under the chassis. Please make sure they are protected by excess of heat, rubbing, foreign objects that could be projected by tyres during vehicle's motion

Fix the pipes using the provided clamps.



Protect piping in hot areas... (exhaust)

OPERATIONS INSIDE THE ENGINE COMPARTMENT

As the evaporator is now installed inside your vehicle, electrically connected and you have already prepared the refrigerant pipes close to the expansion valve, you are now ready to work on the original A/C vehicle circuit.

- A. Disconnect the battery
- B. Drain the complete HVAC Circuit.
- C. Remove the pipes from the Fiat HVAC vehicle's expansion valve and close them with a plastic cap to avoid that humidity goes into.
- D. Remove the two threaded M5 Studs from the Expansion valve.
- E. Install the special provided cap on the manifold.
- F. Install the manifold on the expansion valve and fix it using the screws M5x65.
- G. Install the original Fiat pipes on the manifold, and fix them securely using the M6 x 30 Screws.
- H. Install the pipes you already prepared for the Oakland Evaporator on the manifold and fix them in place using the provided flange and screw.

BEWARE:

Considering the easy and simple operation you have to do, and to minimize any possible humidity infiltration inside the vehicle's refrigerant circuit we highly recommend you to complete everything within 5 minutes.

Webasto cannot be liable of any damage in case you will leave the system open.

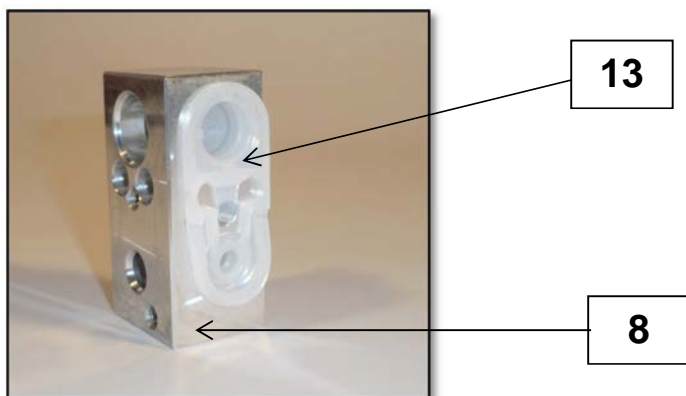


Drain the complete HVAC Circuit

Remove the pipes from the Fiat HVAC vehicle's evaporator valve and close them with a plastic cap to avoid humidity going in.



Remove the two threaded M5 Studs from the Expansion valve.



Install the special cap (part. 13) provided in the kit on the manifold (part. 8) .



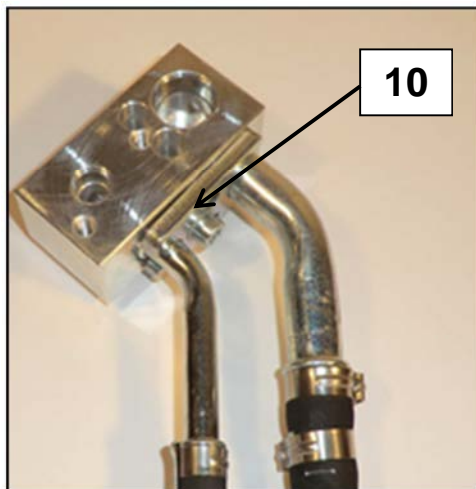
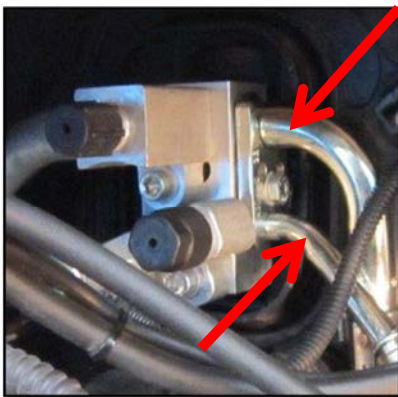
Install the manifold (part. 8) on the evaporator valve and fix it using the screws M5x65 (Part. 9).



8

Install the original Fiat pipes on the manifold (Part. 8), and fix them securely using the M6x30 Screws (Part. 11).

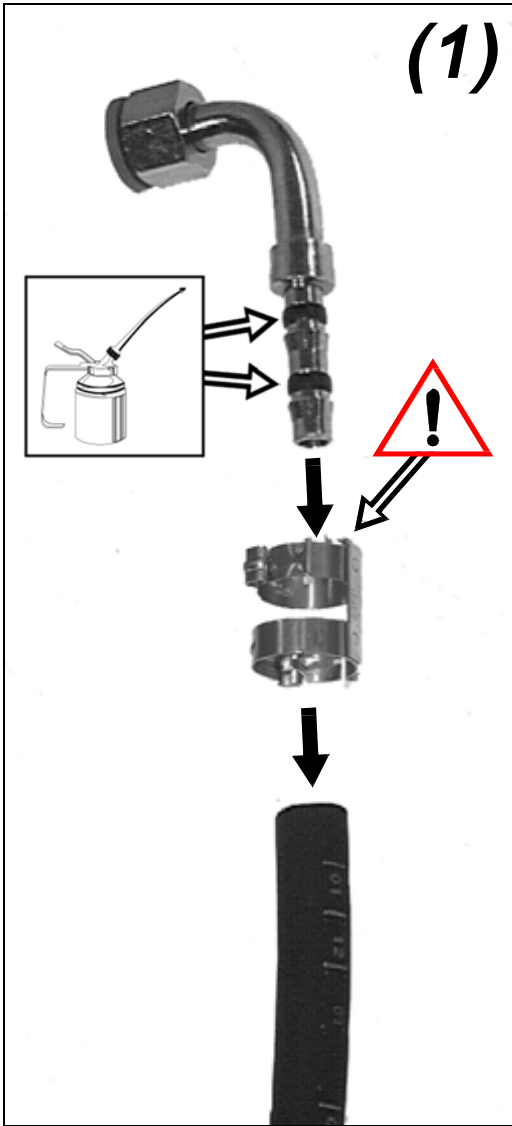
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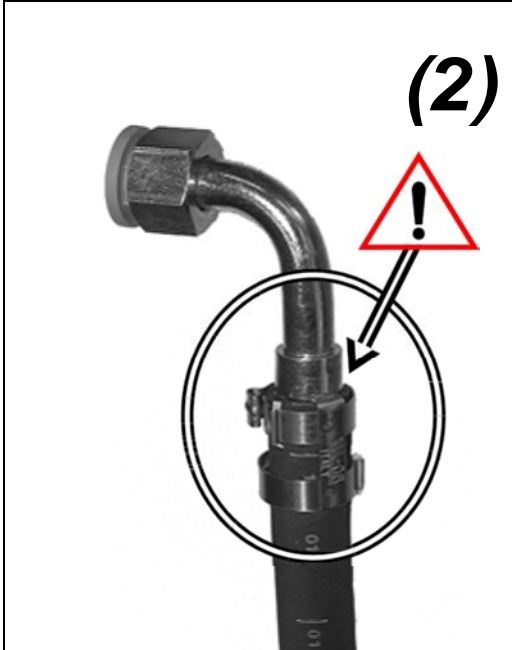
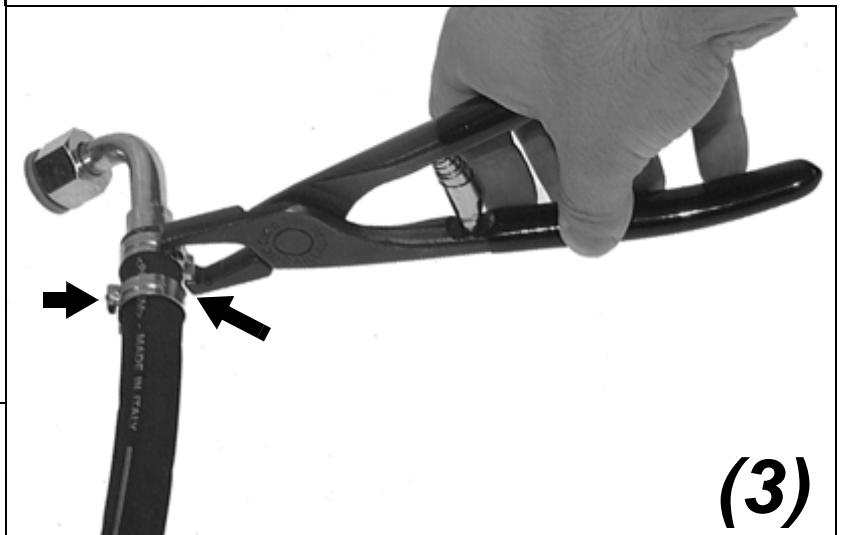
10

Remove the cap (Part. 13) previously installed on the manifold . Install the pipes you already prepared for the Oakland Evaporator on the Manifold and fix them in place using the provided flange (Part. 10).

REFRIGERANT PIPES ASSEMBLY



(1) Oil the O-ring; snap the connection into the hose, positioning the clamp with the tab flush in the position indicated in the figure (2); lock the clamp in place at two points using the special pliers (3).



RAYCHEM CONNECTION USE

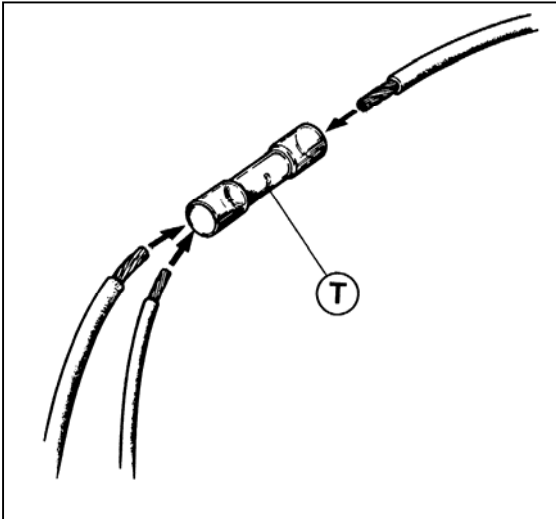


FIG. A

Strip the ends of the wires to be connected and insert them in the connection terminal «T».

FIG. B

Lock the ends of the wires inside the terminal by using the special tool to press down in the position indicated by the arrow in the figure.

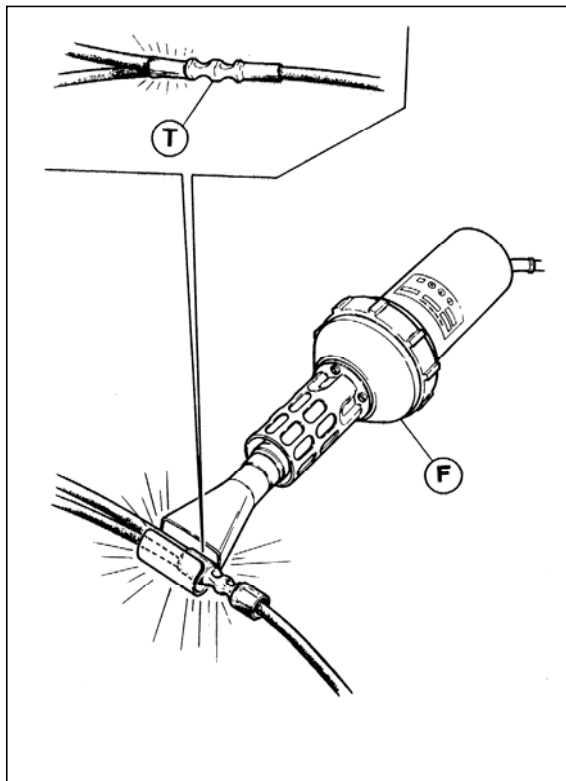
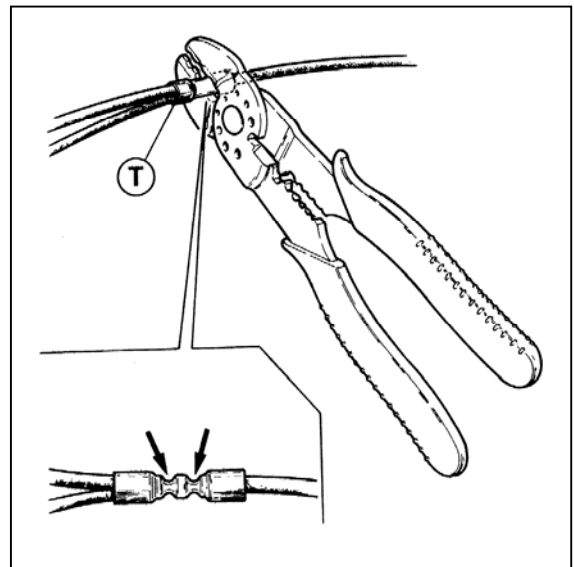


FIG. C

Proceed with insulating the connection terminal by heating the ends of the terminal wrapped over the wires. This is done with the special heating tool «F».

HVAC REFILLING OPERATIONS



We suggest you to fill the circuit using 800g of R134a refrigerant gas if you have used the complete length of refrigerant pipes. If different please adjust the quantity using as reference the chart below.

External temperature °C	Low pressure (Kg/cm ²)		High pressure (Kg/cm ²)	
	min	max	min	max
15,5	1,5	2,3	9,5	13,0
21,0	1,5	2,3	12,5	17,5
26,5	1,5	2,3	14,0	20,5
32,0	1,5	2,5	16,0	24,0
38,8	1,5	2,5	18,5	25,5
43,0	1,5	2,5	22,0	28,0

Please during the refill of the line check as well the pressures following the chart on the side.



Complete this label with the quantity of refrigerant to be charged into the A/C system. Fix the label in the engine compartment in a protected and visible area.

ETHDV008002

- ① CONTIENE GAS R134a - NON CONTIENE "CFC"
- ② ENTHÄLT GAS R134a - ENTHÄLT KEIN "FCKW"
- ③ AVEC GAS R134a - SANS "CFC"
- ④ WITH GAS R134a - "CFC" FREE
- ⑤ INCLUYES GAS R134a - NO CONTIENE "CFC"

QUANTITA' R134a / QUANTITE' R134a / R134a QUANTITY
 R134a MENGE / CANTIDAD R134a

Webasto Kg

LEGAL NOTES AND SAFETY REGULATIONS

Handling of refrigerants

All work on refrigeration systems must be carried out in conformance with EN 378. Safety data sheets or substance

data sheets (can be obtained from the manufacturer) and general notes of the trade association for the chemical industry are available for every refrigerant. For the safe and proper use of refrigerants certain requirements apply that must be complied with:

- Always wear **safety glasses** when handling refrigerants. Refrigerant contact with your eyes can cause severe freeze burns. Immediately flush eyes with plenty of water and get medical attention.

- Always wear **protective gloves** when handling refrigerants.

Liquid refrigerant must not get into contact with your skin. Hands must be protected against frostbites (emerging R 134a vaporizes at - 26,5 °C) and removal of the protective layer of the skin (refrigerants dissolve fats)! In the event of skin contact immediately flush the areas affected with plenty of water and get medical attention.

Leather and textile gloves are not suited (fluorelastomers are preferable).

- Danger of **asphyxiation** exists when refrigerants escape into the atmosphere. Refrigerants are heavier than air. In fact, starting with a concentration of approx. 12 % by volume in the air there is a lack of oxygen required for breathing. Unconsciousness and increased cardiovascular problems caused by stress and a lack of oxygen are the result. This is a deadly danger!

- **Smoking is prohibited** when handling refrigerants. The burning ash of cigarettes can result in a decomposition of the refrigerant causing toxic substances to be produced.

- Prior to the performance of **welding and soldering work on refrigeration systems** the refrigerant must be evacuated and any residues removed by purging with nitrogen.

Under the influence of heat decomposition products of the refrigerant are produced which are not only detrimental to your health but are also liable to cause corrosion.

A pungent smell that can be noticed during soldering is an indication that toxic decomposition products have formed. If these are inhaled damage to the respiratory passages, the lung and other organs may be caused.

- **A fire hazard** also exists in the case of non-flammable refrigerants through ignition of carried-over oil residues and insulation material as well as oil mist due to heavy leaks.

Handling of pressure containers

- **Cylinders must always be secured to prevent tipping or rolling**

- **Do not throw refrigerant cylinders.** When containers are dropped they may become distorted to such an extent that they rip open. Enormous forces will be released upon any sudden evaporation and escape of the refrigerant. The same applies when cylinder valves are broken off. Cylinders may therefore only be transported with the cover cap screwed on.

- **Refrigerant cylinders must not be stored in the vicinity of radiators.** Higher temperatures also result in higher pressures with the danger that the pressure permissible for the individual container may be exceeded. The pressure equipment directive therefore specifies that containers must not be subjected to temperatures in excess of 50 °C.

- **Never heat refrigerant cylinders with an open flame.** The material can be damaged and refrigerant decomposition may occur if cylinders are exposed to extremely high temperatures.

- **Keep valves closed on empty cylinders** to prevent any ingress of moisture.

- **Never overcharge refrigerant cylinders** as enormous pressures may build up when the temperature is increased.

Technical regulations for compressed gases (TRG)

Only those excerpts from regulations are listed below that are relevant to automobile manufacturers and workshops.

TRG 400 (Technical Regulations for Filling Stations in General)

2. Definitions and explanations

2.1 Filling stations

2.1.1 Filling stations are facilities for charging mobile compressed gas containers. The term filling station includes all workshops and facilities.

2.4 Filling stations subject to approval
 Filling stations subject to approval are filling stations where compressed gases are charged into mobile compressed gas containers subject to being sold to third persons.

2.4 Filling stations not subject to approval
 Filling stations not subject to approval are filling stations where compressed gases are charged into mobile compressed gas containers for exclusive use in one's own company.

TRG 402 (Operation of filling stations)

2 Employees and their training

2.1 Filling stations may only be operated and maintained by persons:

1. having reached the age of 18
2. having the required expertise
3. from whom it can be expected that they fulfill their tasks reliably.

2.2 Dependent work may also be performed by persons not complying with the provisions of sect. 2.1 para. 1. and 2. above.

2.3 Prior to the start of their work and after that at regular intervals, but at least once a year, the employees shall be instructed with respect to the following:

1. special dangers involved in the handling of compressed gases,
2. safety regulations, in particular this present technical regulation for compressed gases,
3. measures to be taken in the event of malfunctions, damage and accidents,
4. handling of fire extinguishing equipment and personal protective equipment,
5. operation and maintenance of the filling station based on the operating manual.

5 Filling (excerpts therefrom)

5.1 A compressed gas container may only be charged with the compressed gas identified on it and only in the quantity as results from the data on the container with respect to pressure, weight and volume (see g15 para. 2 Pressure Equipment Directive).

5.2 With containers that may optionally be used for multiple compressed gases, the compressed gas to be charged and - in as far the critical temperature of the compressed gas is above -10 °C - the maximum allowable charge weight in accordance with TRG 104 no. 3.3 must be identified on the container prior to filling.

5.3 Compressed gas containers on which the maximum allowable gauge pressure of the charge at a temperature of 15 °C is indicated in bar, must be

charged based on the pressure (pressure gauge). In the event that upon charging a temperature other than 15 °C prevails, the pressure corresponding to that deviating temperature must be determined by the filling company; it must be ensured that the maximum allowable gauge pressure of the charge in the compressed gas container at 15 °C is not exceeded. To determine any overcharge, the charged containers should be subjected to a random pressure check.

5.4 In the case of compressed gas containers on which the maximum allowable filling quantity is stated as the net weight (charging weight, permissible weight of the charge) in kg, the filling charge must be checked by weighing. The scales for the weighing check must be calibrated.

5.7 Charging and verification measurements must not be conducted by the same person. Verification measurements must be carried out immediately after completion of the charging process.

5.8 Overcharged containers must immediately be safely discharged down to the permissible filling quantity. Thereafter, the charged compressed gas amount is to be newly determined.

5.9 Items 5.4 to 5.7 do not apply to containers for liquid deep-cold compressed gases that are neither flammable nor poisonous; regulations concerning traffic laws remain unaffected thereof.

Waste Act, Ordinance on the Determination of Residual Materials, Residual Material Supervision Ordinance.

These guidelines are the legal basis for the official directive to keep records of the recycling of residual substances subject to supervision.

Waste Act (AbfG) § 2 para. 3

Delegated powers of the Federal Government to issue legal regulations for the determination of residual substances

which are suspected to be impair the general public to a great extent.

Ordinance on the determination of residual materials (RestBestV) § 1

Residual materials within the context of this ordinance are residual substances within the meaning of art. 2 para. 3 AbfG. Prerequisite: The annual quantity of one or more of these substances is > 500 kg/a.

(AbfG) § 11 para. 2

Authorization of the authorities concerned with waste law to issue record keeping regulations. Details are subject to regulation by administrative order of the Federal Ministry.

Residual Material Supervision Ordinance

Directive governing the accountability for residual materials in accordance with art. 11 para. 2 AbfG.

Obligation to maintain recycling records, delivery notes and waste record books.

Prerequisite: The annual amount of one or more of these residual materials is > 500 kg/a.

Disposal of refrigerants and refrigeration oils

Refrigerants intended for disposal must be filled into properly labeled recycling containers taking into account the maximum allowable filling quantity.

Used **refrigeration oils** from installations using halogenated hydrocarbons must be disposed of as hazardous waste. A mixture with other oils or substances is not permissible.

Proper storage and disposal must be in accordance with the directives applicable in the individual states.

Other standards and directives**EN 378 Parts 1-4**

This previously 4-part standard (effective since September 2000) contains safety and environmentally relevant requirements superseding the formerly applicable standard DIN 8975. The additional parts 5 to 10 are available as drafts (Jan. 1994).

VBG 20

These regulations of the trade association (VBG) for foodstuffs and restaurants: "Refrigerating systems, heat pumps and cooling devices" contain just as DIN 8975 principles regarding the design, equipment and installation of refrigerating plants. It will be replaced in future by EN 378.

WARRANTY

Please refer to the enclosed warranty leaflet.
 Fill and send the warranty card to Webasto Diavia.
Warranty period : 24 Months.



(I)

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